

**THE PACIFIC SALMON COMMISSION  
JOINT NORTHERN BOUNDARY TECHNICAL  
COMMITTEE**

**NORTHERN BOUNDARY PANEL  
STRATEGIC SALMON PLAN**

**REPORT TCNB (21)-01**

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Report developed by the Northern Boundary Panel  
and the Northern Boundary Technical Committee

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## **INTRODUCTION**

The Northern Boundary Panel strategic plan was developed by the Northern Panel of the Pacific Salmon Commission (PSC) to provide strategic guidance to the Northern Fund committee on priority information that will help provide any needs or potential data gaps related to management, research, stock assessment, escapement goals, or potential habitat restoration in the northern boundary fisheries. This plan was developed at the request of the Northern Fund Committee and will be implemented for the 2019-28 period with periodical review to maintain relevance as new data becomes available.

## **PLAN PURPOSE**

The Northern Boundary Panel Strategic Salmon Plan will aid in identifying projects, programs or potential actions that are important to achieving the obligations set out within the Northern Boundary Agreement in (Annex IV, Chapter 2), Chapter 5: Coho, and Attachment B of Chapter 7 for the period 2019-2028.

The Northern Panel anticipates that the plan will be considered by the Alaska Department of Fish and Game (ADF&G), the Fisheries and Oceans, Canada (DFO) and others in allocation of resources to meet priority needs relevant to Northern Boundary fish stocks. The plan is largely intended to communicate priority themes relating to Northern Boundary salmon monitoring and general research to the Pacific Salmon Commissions Northern Fund Committee.

This plan will include goals and objectives relevant to fisheries management, in-season run strength assessment, stock assessment, genetic stock identification improvements, enhancement, and research into Northern Boundary Area fisheries which originate north of Cape Caution and south of Cape Suckling that are not part of the Transboundary Fisheries.

## **OBJECTIVES**

The goals of the plan are:

- Goal 1: SALMON MANAGEMENT and STOCK ASSESSMENT—Maintain and improve the information base to support coordinated or cooperative abundance-based management of the fisheries on Northern Boundary stocks to implement the Chapter 2: Northern Boundary agreement and Chapter 5: Northern Boundary coho salmon for 2019–2028.
- Goal 2: SALMON RESEARCH – Continue and advance research into the biology, ecology, genetics, and productivity of Northern Boundary salmon stocks in support of abundance-based management.
- Goal 3: SALMON HABITAT – Maintain, restore, develop, and/or enhance salmon habitat to sustain the long-term productivity of Northern Boundary salmon stocks.

These goals will be entered into with the cooperation and coordinated effort of the management agencies and other entities that have the authority and expertise to conserve and manage the northern boundary salmon stocks under the obligations of the Northern Boundary Agreement. This plan also supports coordination with stakeholders and users of the resource including commercial fisherman, subsistence users, sport fisherman, and First Nations.



Figure 1. Northern Boundary Area - Cape Caution to Cape Suckling.

## GOAL 1: SALMON MANAGEMENT AND STOCK ASSESSMENT

Maintain and improve the information base to support coordinated or cooperative abundance-based management of the fisheries on Northern Boundary stocks to implement the Chapter 2: Northern Boundary agreement and Chapter 5: Northern Boundary coho salmon for 2019–2028.

### Objective 1.1: Continue coordinated abundance-based management of salmon stocks in the Northern Boundary area.

Action Area	Actions/Projects
Salmon Management	Continue sharing harvest data in-season to accurately monitor run strength for all species.
	Continue marine commercial fisheries sampling in the Northern Boundary Area.
	Continue to exchange and work to improve pre-season forecasts for Nass and Skeena sockeye salmon.
	Maintain and improve salmon stock assessment to improve the management of northern boundary stocks.

### Objective 1.2: Implement and refine abundance-based management for Northern Boundary sockeye salmon with an emphasis on Nass and Skeena.

- Finalize the review and continue to work towards the revised comprehensive escapement goal for Nass and Skeena river sockeye salmon as outlined in Chapter 2, section 10.

Action Area	Actions/Projects
Escapement Objectives	Finalize individual Nass and Skeena sockeye escapement goals as a drainage-wide aggregate.
Preseason Forecasting	Continue and improve existing preseason forecasting program for both Nass and Skeena river sockeye salmon.
Run Reconstruction	Continue to finalize and work to improve the Northern Boundary Sockeye Run Reconstruction (NBSRR) for Nass and Skeena sockeye to provide an accurate estimate of Canadian sockeye salmon harvest in Northern Boundary fisheries. (Figure 2)
Stock Assessment	Continue to work to improve the accuracy of inseason sockeye escapements to the Nass and Skeena Rivers. Continue with both adult and smolt assessment programs in both the Nass and Skeena which include but are not limited to the Tyee test fishery on the Skeena (both adult inseason run size estimates and genetic sampling), Nass fishwheels program (adult inseason run size estimates and genetic sampling), Meziadin fishway, Babine adult weir and smolt program, Kitwanga adult weir and smolt program, Hugh Smith Lake adult weir, and McDonald Lake escapement surveys.
Catch Monitoring	Continued marine commercial fisheries sampling in both Alaska and Canadian northern boundary marine fisheries as outlined in Chapter 2, section 15.

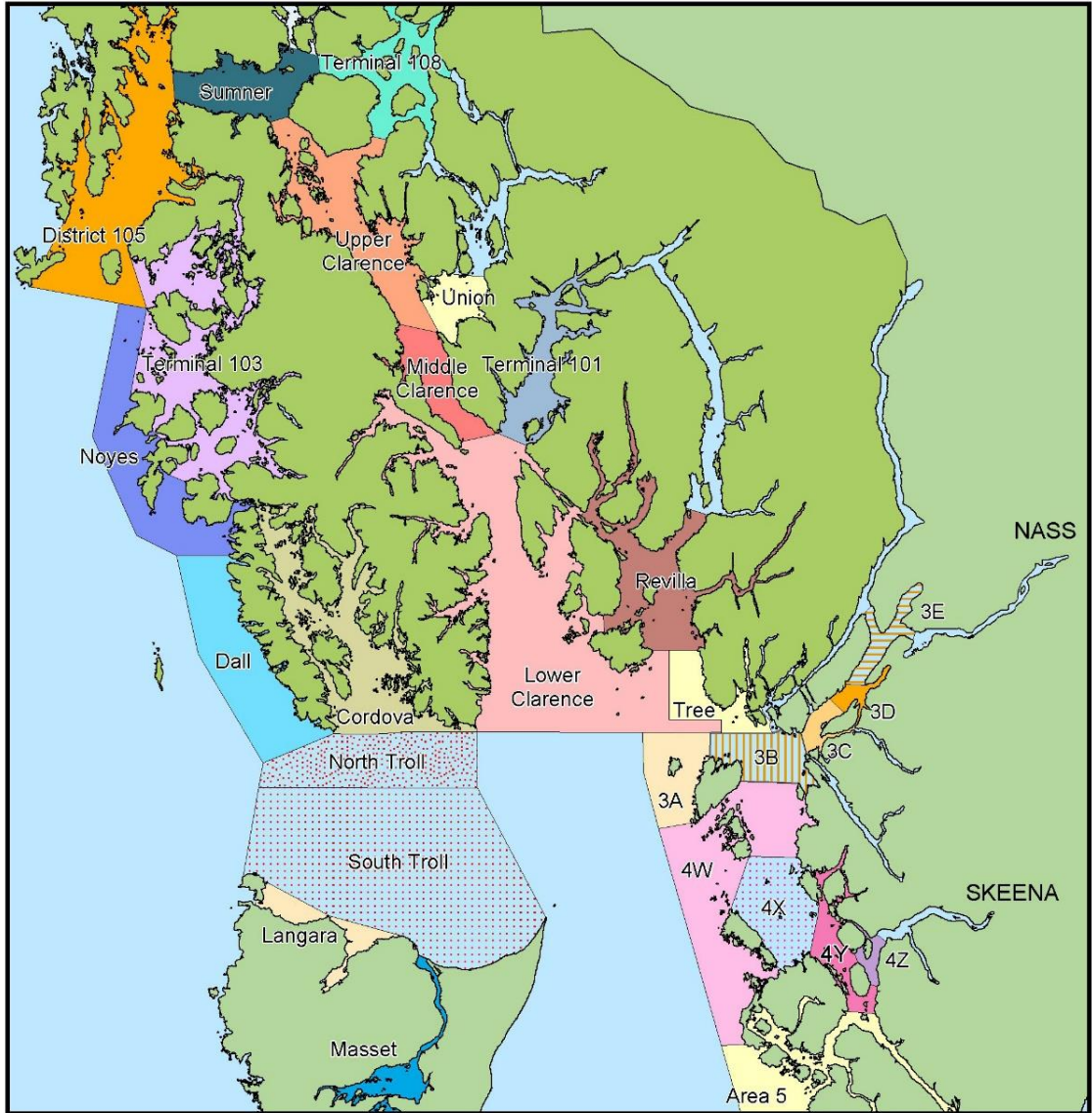


Figure 2. Areas used in the NBSRR as outlined in Chapter 2, section 15.

**Objective 1.3: Implement and refine abundance-based management for Northern Boundary coho salmon.**

With regards to Chapter 5, evaluate coho stocks originating in rivers and mouths situated between Cape Caution and Cape Suckling with focus on Attachment B of Chapter 7.

- Finalize the NBTC coho report, assigned by the Northern Panel in 2017, that will address the state of knowledge on the status of northern coho salmon stocks, including information on: productivity, harvest rates (historical and current) and stock composition in fisheries; monitoring and stock assessment programs; management actions and effectiveness; and provide recommendations to improve the management and conservation of northern boundary coho stocks.

<b>Action Area</b>	<b>Actions/Projects</b>
Escapement Objectives	Establish biological and sustainable escapement goals where applicable.
Escapement Objectives	Periodic review of escapements and refine management where and if necessary.
Preseason Forecasting	Review and refine preseason forecast methodology.
Abundance Estimates	Evaluate the current in-season northern boundary triggers and potentially refine if justified.
Stock Assessment	Continue operations of indicator programs such as Zolzap, Toboggan Creek, Hugh Smith Lake, Berners River, and Auke Creek. Continued support of the Tyee test fishery and Nass fishwheel genetic sampling. Continue fall helicopter surveys for the Ketchikan area index streams to have a southern southeast coho escapement index. Support recommendations to improve the management and conservation of northern boundary coho stocks and prioritize any gaps in indicator stocks as described in the upcoming NBTC coho report. Support Bulkley River escapement estimates and fall helicopter flights.
Catch Monitoring	Continue CWT sampling program in marine commercial fisheries. Continue to develop a comprehensive genetic baseline for Canada and Alaska to support mixed-stock analysis of coho salmon harvests in marine fisheries and total abundance estimates for wild coho salmon stocks.

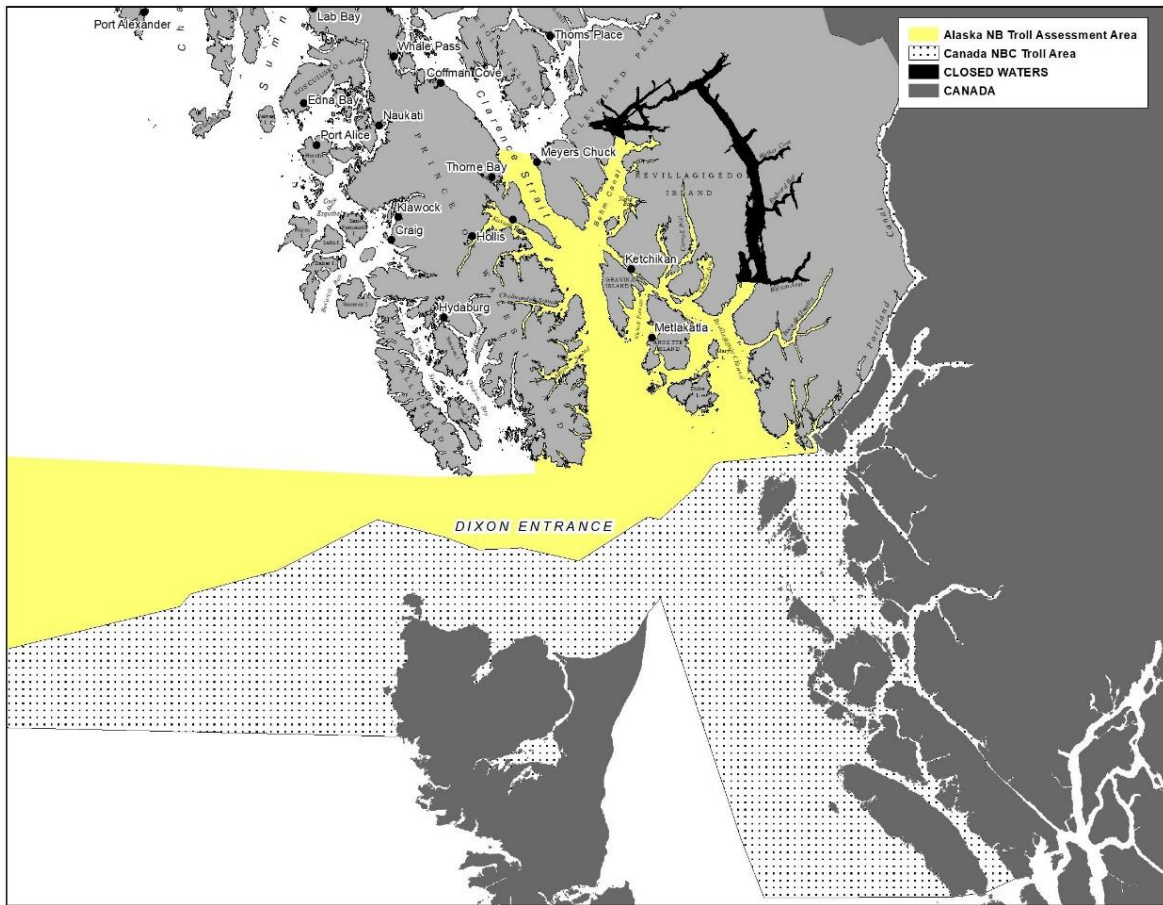


Figure 3. Northern Boundary Coho Troll Assessment Area.

**Objective 1.4: Implement and refine abundance-based management for Northern Boundary pink salmon.**

Action Area	Actions/Projects
Treaty Obligations	Continue to review the pink salmon AAH and remain up to date with the latest catch sharing agreement.
Treaty Obligations	Continue to work towards a finalized harvest pattern analysis report of the pink salmon purse seine fishery in District 104 as outlined in Chapter 2, section 12.
Preseason Forecasting	Maintain the Southeast Coastal Monitoring Program to ensure meaningful preseason harvest forecasts.
Stock Assessment	Maintain Alaska pink salmon index stream aerial surveys.



## GOAL 2: SALMON RESEARCH

Continue and advance research into the biology, ecology, genetics, and productivity of Northern Boundary salmon stocks in support of abundance-based management.

### Objective 2.1: Genetic Stock Identification

Continue to utilize and improve the Alaska/Canada shared GSI baseline for sockeye, coho and pink salmon.

Action Area	Action/Projects
GSI Improvement	Continue to utilize and develop genetic stock identification (GSI) for sockeye and work to develop shared coho, chum, and pink salmon GSI baselines to increase knowledge and improve management of Northern Boundary salmon stocks.
	Continue to identify and fill priority genetic baseline data gaps. e.g. river type sockeye - Brown Bear, Nangeese, improved baseline for Nass and Skeena coho, central coast coho, and southeast Alaska coho stocks.
	Refine GSI sample analysis methods and work collaboratively to ensure both sides agree to the methodology and a shared baseline.
	Development of a SNP panel as Canada transitions from microsatellite for Northern Boundary sockeye stock id.

### Objective 2.2: Influence of Climate on Salmon Productivity

Action Area	Action/Projects
Climate Effects on Salmon	Explore the effects of variable climatic conditions that influence the production of NB wild and enhanced salmon stocks in both the marine and freshwater environments.

### Objective 2.3: General Salmon Research

Action Area	Action/Projects
Research	Explore the potential and need for limnological and trophic surveys in some of the larger sockeye producing lakes within the NB area with special emphasis on the Nass and Skeena.
	Explore changes in population structure (age, sex, fecundity, etc.) and their effects on productivity.
	Investigate relationships and interactions between enhanced and wild salmon in the fisheries and spawning grounds.
	Investigate reduced survival rates of enhanced Babine Lake sockeye salmon and the impact of Babine enhancement on wild Skeena River stocks.
	Further explore the non-Meziadin component of the Nass River sockeye salmon return through radio telemetry, genetics, and other studies to determine the spawning locations, origins and biology of this recently fluctuating component of Nass River sockeye.

### **GOAL 3: SALMON HABITAT**

Maintain, restore, develop, and/or enhance salmon habitat to sustain the long-term productivity of Northern Boundary salmon stocks.

Relevant for all Northern Boundary rivers with emphasis on Nass and Skeena rivers.

#### **Objective 3.1: Habitat Assessment and Improvement**

Action Area	Action/Projects
Habitat	Explore how habitat degradation and/or loss has affected early freshwater survival and rearing capacity.
	Assess constraints to fish migration and consider immediate action to remove potential barriers to fish passage if necessary.
	Develop and refine a shared GIS database on important salmon rearing habitat.
	Explore the benefit or possibility of implementing strategic hatchery enhancement to replace lost wild stock production on the Nass and Skeena.

### **PLAN IMPLEMENTATION AND UPDATES**

The Northern Panel recommends moving forward, that it is important to retain flexibility in determining which actions or projects should be pursued to achieve the goals of the Northern Boundary Strategic Salmon Plan. The Panel recommends the following points be considered in plan implementation and northern fund project approval:

- Actions or projects needed to address a direct obligation to the Northern Boundary agreement
- Social and economic importance of the stock
- Stock status
- Cost benefit of the project
- Feasibility of the project